IN THE CLAIMS

Please amend the claims as follows:

Claims 1-3 (Canceled).

Claim 4 (Original): A method of wavelength conversion of a plurality of optical signal channels spanning a frequency bandwidth, said method comprising: four-wave mixing, in a conversion medium, said plurality of optical signal channels and first and second pump lightwaves having first and second frequencies respectively; selecting frequencies for said first and second pump lightwaves such that (1) the optical signal channel frequencies lie between said first pump lightwave frequency and an average frequency of said two pump lightwave frequencies, and (2) the frequency difference between said first and second pump frequencies is at least about four times the frequency span of said optical signal channels.

Claim 5 (Original): The method of claim 4, wherein said average frequencies of pump lightwaves is approximately equal to a zero dispersion frequency of said conversion medium.

Claim 6 (Original): The method of claim 4, wherein said conversion medium exhibits a non-linear optical property.

Claim 7 (Currently Amended): A wavelength converter comprising:

a demultiplexer, configured to demultiplex a wavelength division multiplexed (WDM) optical signal into at least two demultiplexed WDM optical signals, wherein a first demultiplexed WDM optical signal has a first frequency bandwidth and a second demultiplexed WDM optical signal has a second frequency bandwidth;

a first wavelength converting section comprising a first conversion medium configured to receive said first demultiplexed WDM optical signal and ~~an~~ a pump lightwave, wherein there is an interval between a ~~said~~ frequency of said pump lightwave and one frequency of said demultiplexed WDM optical signal with a frequency closest to said frequency of said pump lightwave~~,~~ and said interval between said pump lightwave and said first demultiplexed WDM optical signal is equal to or greater than said first frequency bandwidth of said first demultiplexed WDM optical signal, and wherein a first output signal, including a first wavelength converted WDM optical signal, is produced at an output of said first wavelength converting section;

a second wavelength converting section comprising a second conversion medium configured to receive said second demultiplexed WDM optical signal and a first and second pump lightwaves, wherein said second demultiplexed WDM optical signal is in a frequency bandwidth between a frequency of said first pump lightwave and an average frequency of said first and second pump lightwaves, wherein ~~a~~ frequency bandwidth between said first frequency of said first pump lightwave and said second demultiplexed WDM optical signal with a frequency closest to said first pump lightwave is set equal to or greater than said frequency bandwidth of said second demultiplexed WDM optical signal, and wherein a second output signal, including a second wavelength converted WDM optical signal, is produced at an output of said second wavelength converting section;

a first filter, coupled to said first wavelength converting section, configured to receive said first output signal and to pass only said first wavelength converted WDM optical signal;

a second filter, coupled to said second wavelength converting section, configured to receive said second output signal and to pass only said second wavelength converted WVDM optical signal; and

a multiplexer, coupled to said first filter and said second filter, configured to multiplex said first wavelength converted WDM optical signal from said first filter and said second wavelength converted WDM optical signal from said second filter.

Claim 8 (Original): The wavelength converter of claim 7, wherein said frequency of said pump lightwave in said first wavelength converting section is equal to a zero dispersion frequency of said first conversion medium.

Claim 9 (Original): The wavelength converter of claim 7, wherein said average frequency of said two pump lightwaves in said second wavelength converting section is equal to a zero dispersion frequency of said second conversion medium.

Claims 10-17 (Canceled).

Claim 18 (Original): A method of wavelength converting a wavelength division multiplexed (WDM) optical signal having a bandwidth WBW, the method comprising injecting first and second pump lightwaves into a conversion medium with said WDM optical signal, wherein (1) said first pump lightwave has a frequency at least WBW less than the lowest frequency in said WDM optical signal, (2) the average frequency of said first and second pump lightwaves is higher than the highest frequency in said WDM optical signal, and (3) said second pump lightwave has a frequency at least 2WBW greater than an average frequency of said first and second pump lightwaves.

Claim 19 (Currently Amended): A method of wavelength converting a WDM optical signal having a bandwidth WBW, the method comprising injecting first and second pump

lightwaves into a conversion medium with said WDM optical signal, wherein (1) said first pump lightwave has a frequency at least 2WBW less than ~~said~~ an average frequency of said first and second pump lightwaves, (2) said average frequency of said first and second pump lightwaves is less than the lowest frequency in said WDM optical signal, and (3) said second pump lightwave has a frequency at least WBW ~~grater~~ greater than the highest frequency in said WDM optical signal.

Claims 20-22 (Canceled).

Claim 23 (Currently Amended): The method of claim 19 ~~or 20~~, comprising combining said optical signal with at least two pump lightwaves.

Claim 24 (Original): The method of claim 23, comprising providing a guard band around all of said pump lightwaves.

Claim 25 (Currently Amended): The method of claim 19 ~~or 20~~, comprising separating the frequencies present in said optical signal from the frequencies present in said pump lightwaves by an amount sufficient to separate noise frequencies from converted output signal frequencies.

Claims 26-33 (Canceled).